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ABSTRACT

The position is taken that the physical parameters of one's involvement in activity learning depend in large measure upon the objectives of the participant. General comments regarding the physical parameters of most activity classes are made. Underlying commonalities existing among these parameters are identified as: (1) freedom from disease; (2) strength; (3) power; (4) agility; (5) balance; (6) flexibility; (7) cardiovascular endurance; (8) cardiorespiratory endurance; (9) local muscular endurance; and (10) coordination. Four basic principles are posited as central to maximizing these common objectives: (1) overload (application of progressively increasing resistance); (2) isolation (overload applied to isolated muscles); (3) S.A.I.D. (specific adaptation to imposed demands); and (4) simulation (simulation of sports skills against resistance). Weight training is specifically examined for problems involved in teaching to specificity of desired effect and to individualization of meaningfulness. A brief discussion of self-concept as a psychosocial factor in activity training is also included. (MJB)

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ACTIVITY SPECIFICITY: PHYSICAL
AND PSYCHOSOCIAL DIMENSIONS *

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The activity professor keyed to accomodating the personal objectives of his or her students recognizes that there are countless such objectives to consider. For example, in swimming, students have personal objectives ranging from learning to swim, through learning to dive, rehabilitating a joint after injury, preparing oneself for a summer job, conditioning for competition, to getting into shape or becoming physically fit. For each of these objectives (and there are undoubtedly others), there is a different technique of practice and of teaching. A similar list of objectives could be generated for virtually all activity courses taught at the college level.

It is fairly clear that the physical parameters which are brought into the forefront of importance depend, in large measure, upon the objectives of the students. I would like to make some general comments regarding the physical parameters involved in most activity classes, and some underlying commonalities which exist. Then I would like to key on a specific activity which is becoming increasingly popular throughout the country --weight training-- and explore some of the problems involved in teaching for specificity of effect and for individualized meaningfulness.

All goals or objectives which relate to physical fitness components

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have a major point in common--whatever activity one engages in to achieve one's objectives must be such that it forces a physiological adaptation process of some kind. It therefore behooves all of us, as professional physical educators, to learn the basic components of fitness and how each can be affected maximally through activity. There are virtually scores of definitions of physical fitness, many of which espouse similar or overlapping concepts. Others, however, relate to isolated facets of overall fitness, and are therefore incomplete. I would like to list those components which I have found to be most widely agreed upon by experts in our profession, and which, therefore, are most often referred to.

Display Overhead Projection #1 Here (quickly define each component)

The central thesis of this discussion is that there is a singularly best way to maximize the development of each of these components in each activity. The definition of each component contains the key as to how one might go about the developmental process. There are, however, four basic principles which must be adhered to if each component is to be achieved maximally.

Display Overhead Projection #2 Here (quickly define each principle)

Such a categorization accounts for the overriding need for activity specificity. Activity specificity, then, is a concept which must account for students' personal goals and objectives. The activity one chooses

should, in all cases, be capable of maximally accomodating one's objectives. For example, one wouldn't enter a handball course if his goal was muscular hypertrophy! The point is clear. However, of far greater importance are the cases involving the student of a particular activity wishing to gain greater strength or endurance or whatever, in order to enhance his/her proficiency at the activity. How can this be handled? Should it be handled at all? Another example will clarify my position on this issue. It is far more efficient for the basketball student to gain necessary leg power (for jumping) in the weight room than on the gym floor. Although there are methods which can be employed on the gym floor, there is a better way.

There are many such examples of problems such as this. The handball student wishing to gain greater agility. The gymnast wishing to become more flexible. The tennis player wishing to develop greater power for the serve or forehand stroke. It is incumbent upon the professor to fill these needs in order that the student's objectives can be maximally realized. Perhaps arranging for a demonstration on how to maximize fitness for one's sport interest would be enough. At least the student would then have the awareness of how or where to begin. The point is that such a thing is rarely done, if ever. All too often the students are subjected to the objectives of the professor, without having room for one's own. Nor should one be made to retain the same objectives throughout the course. For, through learning about the activity, about one's body, and through achieving initial objectives, one's objectives often change. Can you imagine the following situation? The tennis professor says, "O.k. class, that's enough on the serve. Let's all run ten times around the courts." And the student replying, "My cardiovascular endurance is all right. I'd rather work on agility, since that is my weak point at this stage of my game." Why, most professors I know would virtually throw a tantrum! The

student would be branded a troublemaker and probably be disciplined for not staying with the class. Yet, in my way of thinking, the student was absolutely right. I think that, in such cases, the instructor had, through experience, found it easier to have the class engage in mass exercise--it gave him a breather. Mass exercise is not conducive to individual progress as a general rule, because each student's needs and objectives are different.

I have been rambling a bit with my analogies, I realize. But activity specificity and individualized instruction are coincident concepts. They are a pervasive issue which touches virtually all aspects of activity teaching. I would like to digress a bit at this point, and re-examine the basic concepts of fitness and the principles of conditioning in a weight training class. I would like to do this by examining the grading procedures which are, or can be, used. In doing so, I think you will derive an appreciation for how really pervasive specificity and individuality really are.

How does one grade in weight training? There is only a minimal skill factor, certainly not to the extent that bowling or golf involve. And certainly not as objectively measured as they. Nor is there a relatively common goal that applies to all students. Can the instructor grade each student on the basis of how effectively their objectives were realized? This would require extensive measurement and testing procedures. Especially since one would first have to determine how much of each objective the student is inherently capable of achieving within the confines of a single semester.

Another idea is to measure progress.

Display Overhead Projection #3 Here

Practically everyone I know who teaches weight training tell me that they measure progress, and use such measurements in their grading procedures. Instructors forewarning their students, for example, that in order to receive an "A" in weight training, "X" amount of weight must be lifted. This practice often appeases the student not knowing any better, and it certainly makes the instructor's task easier (not unlike the instructor who required his class to run around the courts for a breather). While such a procedure appears, on the face of it, to be relatively objective, nothing could be further from the truth. As the chart depicted here indicates, students are all different with regard to their inherent capabilities. To grade the red fibered individual low because of his lack of power is discriminatory! To grade the heavily-muscled (white fibered) individual low because of his inability to run a sub-six minute mile is also discriminatory. Many of the factors on the chart can be controlled for, and in fact should be. It is also quite possible for one to correct for such individual differences as muscle fiber type. Consider the sliding scale depicted here.

Display Overhead Projection #4 Here

The vertical jump test is a reasonably good indicator of red versus white muscle fiber ratio. A person showing a low vertical jumping ability is endowed, through heredity, with a preponderance of red muscle fiber. It is known that red muscle fiber is more suited for activity requiring great endurance. On the other hand, a person showing great vertical jumping ability is most probably endowed with a preponderance of white muscle fiber, which is more suited for explosive type movements rather than endurance. Biopsies of Olympic champions in various sports attest to the importance of hereditary endowment of appropriate muscle fiber type. A long distance swimmer would never become champion in his/her event if he/she were predominantly white

muscle fiber, for example. Neither would a weightlifter if heredity had given him mostly red fiber. East German and Bulgarian athletes are preselected for their respective sports on the basis of tests similar to the one described.

We know that white fiber is suited to, and used almost exclusively in, explosive movements. We also know that white fiber has the capacity to hypertrophy to a greater degree than red fiber, and that individuals with mostly white fiber are generally stronger than those with mostly red fiber. Since we have a reasonably accurate test for determining white versus red fiber ratio, it is a simple step to predict, on the basis of such a ratio, how much progress each student should be able to make. Carrying the process one step further, we could then predict, with a fair degree of accuracy, how much size increase one can expect for an A, B, C or whatever, and the same for local muscular endurance, strength, power. The red fibered individual, then, who aspired to achieve power would not have to achieve the same amount of power (and, in fact, couldn't) that a white fibered individual with the same objective. Similarly, the white fibered individual wouldn't be required to (and, in fact, couldn't) achieve the same amount of local muscular endurance as the red fibered individual.

There are many more facets to the problem of activity specificity and individuality than those covered in this paper. I hope that what was covered will give those of you involved in activity teaching a new point of view to consider.

I would like to make a few brief comments about some of the psychosocial aspects of activity specificity and individualized instruction. Most of you will undoubtedly conjure many more avenues down which we could travel in our discussion in this regard. The points I have to make, however, are somewhat controversial, and, as in the case of the physical aspects, will give you a different point of view.

Self concept often stems from one's view of how others think of him or her. Such socialization into self concept is often a forced process in that one is constantly being compared to other people and the process of self-comparison is an inevitable step beyond. Accounting for individual differences, individual objectives, and personal problems relating to things which are meaningful to that person can go a long way in altering such a trend and to give the individual a new perspective of him/herself, and also of society at large. By jeopardizing a person because he/she hasn't the physical "equipment" that another person has is not good for one's self image. Anyway, the same person being jeopardized is often praised for his/her competence at the activity requiring that equipment which he/she is in possession of. One may think that such a praise-blame system ultimately balances itself out, but it doesn't. There still remains the problem of self image and being compared with other people. I would like to reemphasize what the East Europeans are doing with their children. From an early age, children are aware of their competencies, and these competencies are emphasized and strengthened. Areas of weakness are not stressed, and this tends to minimize the possibility of comparisons being made--each person is an individual. At least, that's how it is with their sport program. Their athlete pre-selection program can, in my opinion, be adapted by our society, and still allow for such culturally inspired concepts as having fun, freedom of choice, and non-state involvement in athletics. Much individual anxiety can be eliminated if children's activities are geared to their individual capacities, and athlete's training programs were more carefully monitored with regard to parameters such as those mentioned above. Our physical education classes would experience a new-found popularity, our students would be better trained, conditioned and/or skilled. Our National sports effort would flourish, and match even that of the Soviets. What would the price be? Nothing more or less than applying known principles to our teaching procedure.

OVERHEAD PROJECTION # ONE

Basic components of physical fitness:

1. freedom from disease
2. strength
3. power
4. agility
5. balance
6. flexibility
7. cardiovascular endurance
8. cardiorespiratory endurance
9. local muscular endurance
10. coordination

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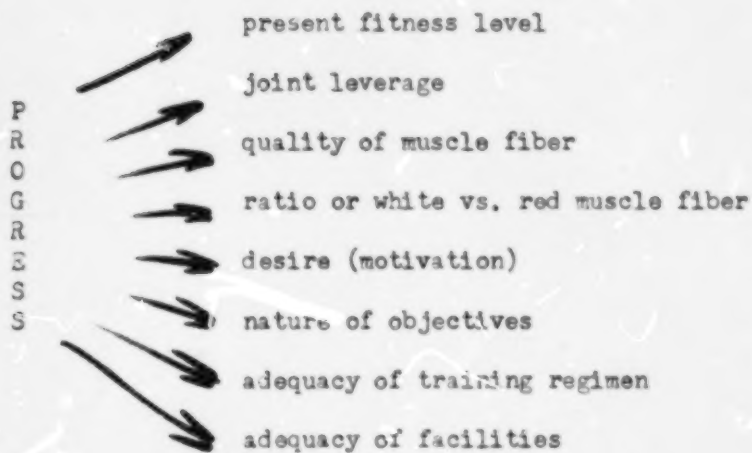
OVERHEAD PROJECTION # TWO

Basic principles of achieving physical fitness or conditioning:

1. Overload Principle (apply progressively increasing resistance)
2. Isolation Principle (overload best applied to isolated muscle)
3. S.A.I.D. Principle (specific adaptation to imposed demands)
4. Simulation Principle (simulate sports skills against resistance)

OVERHEAD PROJECTION # THREE

Factors affecting progress and progress assessment:



OVERHEAD PROJECTION # FOUR

Ratio or expected progress between white versus red fibered individuals:

